ORDER

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

8100.12

12/24/02

SUBJ: DESIGNATED ALTERATION STATION PROGRAM LIMITATIONS

1. PURPOSE. This order applies to all Designated Alteration Stations (DAS) and those Supplemental Type Certificate (STC) projects that have not yet been submitted by a program notification letter. Its purpose is to guide Aircraft Certification Service (AIR), Flight Standards Service (AFS), and DAS organizations altering prototypes at off-site locations. Included is an explanation of the roles and responsibilities of those involved in the DAS STC process. This guidance supersedes all previous policy regarding off-site DAS projects.

2. DISTRIBUTION. Distribute this order to the branch levels of the Aircraft Certification Service, Flight Standards Service, and the Office of Aviation System Standards in Washington Headquarters; to the branch level in the Aircraft Certification Directorates and the Regional Flight Standards Divisions; to the International Field Offices (IFO) and the Flight Standards District Offices (FSDO); to all Aircraft Certification Offices (ACO) and all Manufacturing Inspection District and Satellite Offices (MIDO and MISO); to the Flight Standards Branch and Aircraft Certification Branch at the FAA Academy; to the Suspected Unapproved Parts Program Office; and to the Brussels Aircraft Certification Division and Flight Standards Staff.

3. RELATED PUBLICATIONS. All documents refer to the latest revision.

→Title 14 of the Code of Federal Regulations (14 CFR) part 21, Certification Procedures for Products and Parts (part 21).

→14 CFR part 119, Certification, Air Carriers and Commercial Operators.

→14 CFR part 121, Subpart L, Maintenance, Preventive Maintenance, and Alterations.

→14 CFR part 145, Repair Stations.

→Order 8110.4, Type Certification.

→Advisory Circular (AC) 21-40, Application Guide for Obtaining a Supplemental Type Certificate.

4. DEFINITIONS.

→**Applicant** means the DAS holder who applies for the STC.

→**Authorized Representatives** (AR) are the DAS staff members authorized to make findings of compliance, determination of conformity, and/or airworthiness on behalf of the Federal Aviation Administration (FAA).

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Initiated By: AIR-100/200/AFS-300

✈**DAS authorized facilities** are the facilities identified in the DAS procedures manual.

✈**DAS holder** is an organization with the authority, delegated by the FAA under part 21 to issue STCs. To qualify as a DAS holder, an organization must be a repair station, commercial operator, air carrier, or manufacturer and employ or have available a staff of individuals qualified to determine compliance.

✈**Off-site** means any location not identified in the DAS procedures manual as an authorized facility.

✈**Organization Management Team** (OMT) means the FAA personnel responsible for managing the DAS and overseeing its projects. The OMT consists of personnel as needed from the responsible Aircraft Certification Office (ACO), Certificate Management Office (CMO), Manufacturing Inspection District Office (MIDO), Flight Standards District Office (FSDO), and Aircraft Evaluation Group (AEG).

✈**Program Notification Letter** (PNL) is the document outlining the program details submitted by the DAS to the FAA for approval.

✈**Prototype Installation** is the product alteration used for showing and finding compliance with airworthiness requirements.

5. WHY GUIDANCE IS NEEDED.

a. The DAS regulations were meant to reduce delays that aircraft and aircraft component modifiers experienced in obtaining STCs under normal FAA procedures. When we at the FAA wrote the regulations, we did not envision the growing complexity of modern business arrangements that now, typically, involve many organizations in the development and production of data.

b. Our main concern is that when projects are performed at a location other than a DAS holder's approved facility, it increases the risk that the processes--manufacturing, installation, inspection, and tests--necessary to comply with the requirements of 14 CFR § 21.33(b) may not be performed satisfactorily.

6. LEGAL BASIS. Title 49 of the United States Code Section 44702 authorizes the FAA Administrator to delegate matters related to aircraft certificates to a qualified private person. Title 14 CFR part 21 allows the FAA to authorize Designated Alteration Stations (DAS) to issue Supplemental Type Certificates (STC).

7. ROLES AND RESPONSIBILITIES IN THE DAS STC PROCESS.

a. Applicant and FAA Roles. The applicant is responsible for compliance, and must ensure that the altered product complies with all applicable airworthiness requirements. Title 14 CFR part 21 and FAA Order 8110.4 prescribe both the requirements and procedures that the STC applicant and we must satisfy. For example, 14 CFR § 21.115 requires the STC applicant to show compliance with the applicable airworthiness requirements for the altered product. Likewise, we must make a corresponding finding of compliance to determine whether the applicant has satisfied the airworthiness requirements.

b. **DAS STC Findings.** In a DAS-issued STC, the DAS ARs, on our behalf, make the findings of compliance and conformity, and determine that the product is of proper design for safe operation. Otherwise, the DAS STC process follows the same pattern as the FAA STC process. The same forms and documentation (or equivalents approved in the DAS procedure manual) must be properly completed.

c. The DAS holder. As the applicant, the holder must:

(1) Satisfy the applicant requirements in the regulations and FAA directives.

(2) Be responsible for the development of type design and compliance substantiation data to show that the alteration meets applicable airworthiness requirements.

(3) Perform the inspections and tests, and complete the forms required by FAA regulations and policy. For example, the DAS holder must complete FAA Form 8130-9, Statement of Conformity, before the DAS ARs perform inspections and tests for us.

d. The DAS AR staff:

(1) Makes findings for the FAA.

(2) Completes forms and makes approvals normally prepared by FAA engineering and manufacturing inspection personnel, such as Request for Conformity, Type Inspection Authorization (TIA), and Supplemental Type Inspection Report (STIR). For example, the DAS ARs perform the FAA conformity inspection and document it on FAA Form 8100-1, Conformity Inspection Record.

(3) Must make a specific finding of compliance, as required by 14 CFR §21.463(a)(2), for each applicable airworthiness requirement.

(4) May be involved both in showing compliance for the DAS holder and finding compliance for the FAA.

> **NOTE**: An AR may <u>not</u> perform FAA conformity inspections if they completed the Statement of Conformity for the DAS holder (as the applicant).

8. STC PROTOTYPE LOCATIONS.

a. DAS Authorized Facilities. The DAS procedure manual identifies the authorized facilities where the DAS holder may perform alterations. They can be:

(1) For a repair station DAS, only the facilities at the fixed location and satellite location identified by the repair station certificate and approved inspection procedures manual.

(2) For air carrier or commercial operator DAS, those facilities identified in their continuous airworthiness maintenance program and/or general maintenance manual, and/or listed in their operations

specifications as substantial maintenance providers authorized for "major alterations." The facilities must be authorized to alter the particular make/model products. The manufacturing processes, tooling, and equipment used for DAS projects at each facility must be equivalent to those of their main alteration facility.

(3) For a manufacturer DAS, the facility at the fixed location covered by its quality control system or fabrication inspection system.

b. Off-Site Locations. Designated Alteration Stations may be allowed to issue STCs based on prototype installations at locations other than the approved DAS facility. Such programs are typically performed at a customer's maintenance facility or other facility more convenient to the customer. However, the use of facilities, personnel, operating procedures, and technical data at locations other than the DAS authorized facilities increases the risk that manufacturing, installation, inspections, and tests may not be performed satisfactorily. Off-site programs require added scrutiny by the FAA and the DAS ARs.

9. OFF-SITE PROJECT REQUIREMENTS. Off-site prototype installations may be done only at certificated facilities (foreign or domestic repair station, air carrier, commercial operator, or manufacturer). The off-site facility must be authorized by the FAA to alter the product and to approve the altered product for return to service. A repair station DAS may not use the authority of 14 CFR §145.51(d) for "off-site" installations. Prototype installation may be done at off-site locations only if the procedure manual addresses requirements **9a** through **9e** below, and all the following requirements (as well as those in Order 8100.9, DAS, DOA and SFAR 36 Authorization Procedures) are satisfied:

a. Off-site Facility Management. The DAS procedure manual must contain procedures for managing off-site prototype alterations, including a checklist for evaluation of the off-site facility by either the DAS holder or the DAS ARs. If the DAS holder evaluates the facility and finds it acceptable, the DAS ARs must verify the findings. The findings must be documented by the DAS holder and made available to us. The procedure manual requirements and the evaluation of the off-site facility must ensure the following:

(1) Off-site facilities have experience performing similar types of alterations on the make/model product being altered.

(2) Decisions regarding workmanship, quality, conformity, deviations, and safety are made without undue influence or pressure.

(3) Documentation generated by the DAS at off-site locations complies with the DAS procedure manual.

b. Off-site Personnel and Processes:

(1) Inspection ARs must comply with the project-specific FAA-approved conformity plan. The procedures must provide a means to track the status of required conformity inspections. Conformity inspections must satisfy Order 8110.4 and the DAS procedure manual.

(2) An inspection AR must be at the off-site facility during the installation portion of the project. If the product is undergoing maintenance during the project, the AR must be present if any portion of the alteration is affected.

(3) Engineering ARs must review and document acceptance for all deviations in the prototype articles on FAA Form 8100-9, Statement of Compliance with Airworthiness Standards.

(4) ARs must provide advisory/technical assistance to support off-site locations.

(5) The off-site facility (not DAS ARs) is responsible for all installation and return-to-service functions. ARs are not authorized to document installation work.

(6) ARs must have full access to any off-site location to perform any inspection they deem necessary.

c. Off-site Manufacturing. The processes, tooling, and equipment used at the off-site facility must be:

(1) Equivalent to those at the DAS authorized facility;

(2) Appropriate for the alteration; and

(3) Able to produce articles and products conforming to the type design.

d. Off-site Purchasing and Receiving. To prevent using nonconforming or unsafe articles obtained from outside sources, the DAS holder must maintain an effective purchasing and receiving inspection system to ensure that:

(1) Purchase orders/contracts provide sufficiently detailed specifications (that is, envelope or specification control drawing), design data, inspection, tests, and FAA requirements to ensure articles or services purchased meet the requirements of the type design data.

(2) Conformity of processes and raw materials to design data is independently verified by inspections and/or tests. For raw materials, conformance starts by reviewing the suppliers' certificate of conformance. Material must not be accepted solely after reviewing a certificate of conformance from the supplier.

(3) The DAS holder maintains configuration control and final design change approvals for all items, including supplier-designed parts. The DAS holder may not delegate any of these responsibilities to off-site facilities or suppliers.

(4) All purchase documents given to suppliers must specify all applicable FAA and technical requirements, including inspections and tests necessary to show conformance of the supplied items.

(5) When industry or military process specifications offer alternate methods of operations or special processes, drawings must clearly identify which method or process is to be used. When the

specifications call for written procedures or procedure qualification, the AR must evaluate these procedures to determine their ease of understanding and whether they are adequate for the operation.

(6) The off-site facility receives prototype articles or parts only from DAS holder-approved suppliers.

(7) Incoming articles and material conform to the type design data before acceptance and installation.

(8) Suppliers to the off-site facility are formally advised of FAA requirements and quality assurance procedures.

(9) Articles obtained from subtier suppliers by the off-site facility are under the same degree of control exercised by the DAS holder.

e. FAA Notification for off-site projects. The DAS should notify us early in the project of any off-site plans. The DAS may want to obtain our concurrence on the project's location prior to expending significant effort on the project. The DAS must submit to us a PNL including or accompanied by the following:

(1) Location, ratings, and limitations of the off-site facility, including organization's certificate number and the name of the facility's FSDO principal inspector.

(2) Documentation of the evaluation of the off-site facility.

(3) A list of ARs used on and off-site. If particular ARs are not yet identified, estimate the number and disciplines. Send a follow-up letter when the number and disciplines of additional ARs are known.

(4) Pertinent details of the project, including, but not limited to, the off-site facility's involvement in engineering data development, conformity inspections at any level, and any certification testing, including ground and flight testing.

(5) The other items required by 14 CFR § 21.463(a)(1) and Order 8100.9.

f. Off-site project coordination within the FAA. The OMT must review and approve each off-site STC project before any prototype installation starts. In addition to the existing project management and coordination requirements of Order 8100.9, the OMT must coordinate with the off-site facility's principal maintenance inspector. This is to verify that the facility has experience with the types of alterations on the specific product(s) (make and model) the project involves. The OMT must also consider its own ability to oversee and participate in the project, based on the facility's location. The OMT must coordinate with the off-site location's geographic FAA offices as required. The OMT should ensure that:

(1) The project is not authorized if its location hinders the FAA from reasonably conducting the necessary involvement and surveillance.

(2) The DAS has satisfactory experience on similar projects of the same product and model type.

(3) The DAS has enough experience and knowledge to manage the off-site project.

(4) The off-site facility is authorized to approve the altered product for return to service.

(5) The conformity inspection and certification plans are acceptable.

10. DATA DEVELOPMENT RESPONSIBILITIES.

a. The ability of the DAS to issue STCs is limited to those areas where the DAS holder and DAS ARs have demonstrated competence. Part of the basis for the DAS authorization is the DAS holder's and its AR's experience and understanding of the products they alter, and understanding of the design concepts introduced by the alteration. The DAS must provide substantiating data to meet the applicable airworthiness requirements and determine that the altered product is in a condition for safe operation.

b. The DAS can not approve designs developed by others without having a complete understanding of the design, and taking full responsibility for the integrity and completeness of compliance findings for the design and installation of the alteration. The DAS holder, as the applicant, is responsible for overall alteration development, including design integration, development of design and substantiation data, prototype installation, and certification. The DAS must ensure complete substantiation for showing and finding compliance with the airworthiness standards for the design and installation of the systems and all components (including items previously approved and used in other applications) involved in the STC.

c. Lower level design/substantiation data developed by suppliers is acceptable, if the DAS holder is involved in all aspects of showing compliance for the integration of the design and substantiation data.

d. The DAS holder must review and validate that all data not developed by the DAS holder applies to the alteration and provides necessary substantiation of compliance with airworthiness standards. Proper compliance with the airworthiness standards can be established only when type certification requirements are considered early in the design development process. This mandates early involvement by the DAS on any program leading to issuance of an STC.

e. The DAS coordinates with the FAA by providing a PNL detailing all parties (other than the DAS holder) involvement in the design of the project.

f. The OMT must decide that:

(1) The DAS can manage the basic design and integration development.

(2) The incorporation of data not developed by the DAS holder is appropriate.

11. LIMITS OF DAS AUTHORITY. A DAS may issue STCs only for alterations that the DAS holder is able to perform and return to service at its authorized facility. The DAS may not be given design approval authority for any products not covered by the DAS holder's authority to alter products. The OMT must limit the DAS's authority based upon the experience and capability the DAS holder has demonstrated. Flight Standards OMT members must ensure that repair station DASs have the appropriate ratings. For example, any installation of radios or instruments that involves alteration of the aircraft requires the repair station to have either an airframe or limited airframe rating. The OMT must also consider the DAS AR's experience and understanding of the different types of alterations they are authorized to do. DAS procedure manuals must specify the makes and models of products covered by the authorization, and the types of alterations the DAS is authorized to approve. For example, a procedure manual limitation may include:

Avionic and Electrical System Installations	Boeing 727, 737, and 747 series
Aircraft Interior Installations	Boeing 727 series

12. DAS MANAGEMENT COORDINATION. Members of the OMT must inform the other OMT members of any information related to the DAS authorization. For example, Flight Standards Aviation Safety Inspectors should notify the ACO personnel of any certificate changes or changes in limitations that may affect the limitations of the DAS.

13. REQUESTS FOR INFORMATION. You can obtain additional information, or ask questions about this order, at the Aircraft Certification Service, Delegation and Airworthiness Programs Branch, AIR-140, telephone (405) 954-7072.

14. SUGGESTIONS FOR IMPROVEMENT. Send suggestions, clarifications or comments for improvement of this order to: Aircraft Certification Service, Automated Systems Branch, AIR-520, Attention: Directives Management Officer. You can use FAA Form 1320-19, Directives Feedback Information, to do this. At Internet address www.feds.faa.gov, select “Browse,” then select the numerical range of the form.

Nicholas A. Sabatini
Associate Administrator for
Regulation and Certification